

That Which is Claimed is:

1. A dry cleaning method comprising the steps of:
transferring a first densified gas based dry-cleaning solution from a first liquid chamber of the divided working tank to a wash tank containing a dry-cleanable article;
contacting the dry-cleanable article with the first dry-cleaning solution;
returning the first dry-cleaning solution from the wash tank to the divided working tank;
transferring a second carbon densified gas based dry-cleaning solution from a second liquid chamber of the divided working tank to the wash tank;
contacting the dry-cleanable article with the second dry-cleaning solution; and
returning the second dry-cleaning solution from the wash tank to the divided working tank.
2. The method according to Claim 1, further comprising the step of storing a plurality of densified gas based dry-cleaning solutions present as two-phase systems in a divided storage vessel having a plurality of liquid chambers that share a common vapor space.
3. The method according to Claim 1, wherein the first densified gas based dry-cleaning solution is a first carbon dioxide based dry-cleaning solution and the second densified gas based dry-cleaning solution is a second carbon dioxide based dry-cleaning solution.
4. The method according to Claim 3, wherein the first densified gas based dry-cleaning solution is selected from the group consisting of a pre-wash solution, a wash solution, and a coating solution, and wherein the second densified gas based dry-cleaning solution is selected from the group consisting of a wash solution, a coating solution, and a rinse solution.
5. The method according to Claim 3, wherein the step of returning the first carbon dioxide based dry-cleaning solution from the wash tank to the divided

working tank comprises the step of returning the first carbon dioxide based dry-cleaning solution from the wash tank to the first chamber of the divided working tank.

6. The method according to Claim 3, wherein the step of returning the second carbon dioxide based dry cleaning solution from the wash tank to the divided working tank comprises the step of returning the second carbon dioxide based dry cleaning solution from the wash tank to the second chamber of the divided working tank.

7. The method according to Claim 6, further comprising the step of distilling the second carbon dioxide based dry cleaning solution in the second liquid chamber to form still bottoms and vapor consisting essentially of carbon dioxide.

8. The method according to Claim 3, further comprising the step of transferring a first volume of the first carbon dioxide based dry cleaning solution from the first liquid chamber to a third liquid chamber of the divided working tank, wherein the step of transferring the first volume from the first liquid chamber into a third liquid chamber precedes the step of transferring a first carbon dioxide based dry cleaning solution from the first liquid chamber to the wash tank.

9. The method according to Claim 8, wherein the step of transferring a first volume comprises equilibrating the liquid levels in the first liquid chamber and the third liquid chamber.

10. The method according to Claim 8, further comprising the step of transferring a second volume of the first carbon dioxide based dry-cleaning solution from the third liquid chamber into the first liquid chamber after transferring a first carbon dioxide based dry-cleaning solution from the first liquid chamber to the wash tank, such that a third volume of the first carbon dioxide based dry-cleaning solution remains in the third liquid chamber.

11. The method according to Claim 10, wherein the step of transferring a second volume comprises equilibrating the liquid levels in the first liquid chamber and the third liquid chamber.

12. The method according to Claim 10, further comprising the step of transferring the second volume of the first carbon dioxide based dry-cleaning solution from the first liquid chamber to the wash tank.

13. The method according to Claim 12, further comprising the step of distilling the third volume of the first carbon dioxide based dry-cleaning solution in the third liquid chamber.

14. The method according to Claim 13, wherein the distilling step comprises the steps of:

boiling the third volume of the first carbon dioxide based dry-cleaning solution in the third liquid chamber to form still bottoms and vapor, the vapor consisting essentially of carbon dioxide;

condensing the vapor from the third liquid chamber to form a liquid consisting essentially of liquid carbon dioxide;

collecting the liquid carbon dioxide in the second liquid chamber; and
purging the still bottoms from the third liquid chamber.

15. The method according to Claim 14, wherein the step of returning the first carbon dioxide based dry-cleaning solution from the wash tank to the divided working tank comprises the step of returning the first carbon dioxide based dry-cleaning solution from the wash tank to the first liquid chamber.

16. The method according to Claim 15, wherein the step of returning the second carbon dioxide based dry-cleaning solution from the wash tank to the divided working tank comprises the step of returning the second carbon dioxide based dry-cleaning solution from the wash tank to the first liquid chamber.

17. The method according to Claim 15, wherein the step of returning the second carbon dioxide based dry-cleaning solution from the wash tank to the divided working tank comprises the step of returning the second carbon dioxide based dry-cleaning solution from the wash tank to the third liquid chamber, the method further comprising the steps of:

adding a coating adjunct to the second carbon dioxide based dry-cleaning solution during or after the step of transferring the second carbon dioxide based dry-cleaning solution from the second liquid chamber to the wash tank; and

distilling the second carbon dioxide based dry-cleaning solution in the third chamber.

18. The method according to Claim 8, further comprising the step of transferring the first volume of the first carbon dioxide based dry-cleaning solution from the third liquid chamber to the wash tank before transferring a first carbon dioxide based dry-cleaning solution from the first liquid chamber to the wash tank.

19. The method according to Claim 18, further comprising the step of adding a pre-wash adjunct to the first volume of the first carbon dioxide based dry-cleaning solution.

20. The method according to Claim 18, further comprising the steps of: contacting the article with the first volume of the first carbon dioxide based dry-cleaning solution; and

returning the first volume of the first carbon dioxide based dry-cleaning solution from the wash tank to the third liquid chamber of the divided working tank before transferring a first carbon dioxide based dry-cleaning solution from the first liquid chamber to the wash tank.

21. The method according to Claim 20, further comprising the step of distilling the first volume of the first carbon dioxide based dry-cleaning solution in the third liquid chamber after returning the first volume of the first carbon dioxide based dry-cleaning solution from the wash tank to the third liquid chamber.

22. The method according to Claim 21, wherein the distilling step occurs during at least one of the steps of transferring a first carbon dioxide based dry-cleaning solution from the first liquid chamber to the wash tank, contacting the article in the wash tank with the first carbon dioxide based dry-cleaning solution, returning the first carbon dioxide based dry-cleaning solution from the wash tank to the divided working tank, transferring a second carbon dioxide based dry-cleaning solution from

the second liquid chamber to the wash tank, contacting the article in the wash tank with the second carbon dioxide based dry-cleaning solution, or returning the second carbon dioxide based dry-cleaning solution from the wash tank to the divided working tank.

23. The method according to Claim 22, wherein the step of returning the second carbon dioxide based dry-cleaning solution from the wash tank to the divided working tank comprises the step of returning the second carbon dioxide based dry-cleaning solution from the wash tank to the first liquid chamber.

24. A cleaning method comprising the steps of:
transferring a first densified gas based treating solution from a first liquid chamber of a divided working tank having a plurality of liquid chambers that share a common vapor space to a wash tank containing an article;
contacting the article with the first treating solution;
returning the first treating solution from the wash tank to the divided working tank;
transferring a second carbon densified gas based treating solution from a second liquid chamber of the divided working tank to the wash tank;
contacting the article with the second treating solution; and
returning the second treating solution from the wash tank to the divided working tank.

25. The method according to Claim 24, further comprising the step of storing a plurality of densified gas based treating solutions present as two-phase systems in a divided working tank having a plurality of liquid chambers that share a common vapor space.

26. The method according to Claim 24, wherein the method is a dry cleaning method and wherein the article is a garment.

27. The method according to Claim 24, wherein the article is a hard substrate.

28. The method according to Claim 24, wherein the hard substrate is a microelectronic device.